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ABSTRACT

This study looks at the retraction phenomenon of the alveolar fricatives [s] and [z] in Cariocan Portuguese, the dialect used in Rio de Janeiro, Brazil and its correlation with selected social characteristics of the study's informants. No prior study exists that focuses only on this phonological feature in this dialect. Before describing retraction, the consonant system of Brazilian Portuguese with 19 phonemes is shown to be validated. Data collected in Rio de Janeiro using techniques adopted by linguists such as Labov are presented. As the data are presented, results of the sample are provided as well as the statistical significance of the results in relation to the production rate of the feature studied. Finally, the importance of the study is evaluated. (JL)

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RETRACTION IN CARIOCAN PORTUGUESE

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Abstract: This study deals with retraction in Cariocan speech. I start by briefly explaining the purposes of this work, and mentioning some literature related to this phenomena not specifically in this same dialect, but in Brazilian Portuguese as a whole.
Later, I present the data collected in Rio de Janeiro using techniques adopted by linguists like Labov, who has also done fieldwork in sociolinguistics. As I present the data, I show not only the results from my sample, but also the statistical significance of these results in relation to the production rate of the feature studied here.
At the end, I critically evaluate the importance of this study.

Introduction and literature

This paper deals with the retraction phenomenon of the alveolar fricatives [s] and [z] in Cariocan Portuguese, the dialect used in Rio de Janeiro, Brazil and its correlation with selected social characteristics of the study's informants. No prior sociolinguistic study exists that focusses only on this phonological feature in this dialect; but, there have been studies on both European and/or Brazilian Portuguese phonology and other related areas which refer to this process. Therefore, it is worth looking at works by Mattoso Câmara (1976), Head (1964), Bortoni-Ricardo (1985), Shaw (1986), and Parkinson (1988) since in one way or another, they approach this process in the Portuguese language.

Before describing retraction, I introduce the consonant system of Brazilian Portuguese with 19 phonemes, excluding the semivowels /j/ and /w/, which is shown to be usually validated by linguists like Head (1964:138-64) and Bortoni-Ricardo (1985:38), among others. However, it should be

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emphasized that the main focus of this paper is going to be on the phonemes /ʃ/, and /ʒ/. See table 1.1 below.

Table 1.1 **Brazilian Portuguese Consonant Phonemes**

		Bilabial	Labio-dental	Dental	Alveolar	Palatal	Velar	Uvular
Plosives	voiceless	p		t			k	
	voiced	b		d			g	
Fricatives	voiceless		f		s	ʃ		χ
	voiced		v		z	ʒ		
Nasals		m			n	ɲ		
Laterals					l	ʎ		
Flap					ɾ			

Methodology and data elicitation

How to collect data for this study was my main concern at the beginning of this research. This is because the collection of reliable data is the foundation of any trustworthy investigation. Therefore, I aimed at selecting a reliable sample of the population and eliciting the data from this same sample. As could be expected, this dilemma is not unique, since other linguists producing similar sociolinguistic studies in the past faced the same problem of how to obtain accurate and useful sociolinguistic information. (Wolfram and Fasold, 1974:36; Modaressi, 1978:14)

As has already been mentioned, this research is aimed at accounting for the retraction of the sibilant [s] in Cariocan speech. This study intends to

relate this phenomenon to one or more social factors, if any correlation exists. However, in order to establish such a correlation, it was necessary to take an impartial look at the population of Rio de Janeiro and decide what portion of the population would yield more reliable data for this purpose. One thing had to be taken into consideration: the fact that the extralinguistic factors chosen to isolate the sample for this study were of crucial importance for the successful outcome of this research.

In particular, I decided to use the extralinguistic correlates age, education, and sex as the basis of this study. It is expected that both age and education combined mostly decide certain alternations that one might have in language use. Sex is also included as one of the correlates, for according to a variety of previous studies females are known to have different speech features from males.

After having decided what factors were to be used to isolate the population for this research, it was necessary to find a representative number of subjects within this same population. Following Labov's idea of random sampling method for selecting informants, I decided on this same methodology that had already been proved to be reliable in other works by authors like Wolfram and Fasold.

I decided on the sex correlate with its two cells (males and females), the use of level of college education for the education correlate, and the following groups for the age correlate: 18-25, 26-39, and over 40 years old. Plus, I also decided to have six informants for each cell using previous works of reliable researchers in the study of social dialects such as Wolfram & Fasold (1974:40), who require the use of at least five subjects for each cell.

See table 1.2 for the different combinations using the correlates chosen for this study.

Table 1.2 Level of College Education

	MALE	FEMALE
18-25 years old	6	6
26-39 years old	6	6
over 40 yrs. old	6	6

Once this preliminary phase had been concluded, it was necessary to select the actual informants to be used in the study. Therefore, I contacted a large language institute in Rio de Janeiro with more than twenty branches throughout the city, and thousands of employees. I was granted permission to use a list of employees of the institution, from which most of the informants were randomly selected.

The research was conducted without many obstacles. Once the subjects were contacted, they were told what they were expected to do to cooperate with this work. 75% of the subjects were selected from this establishment, while the remaining 25% were selected from the staff of the high school from which I graduated, and also from the staff of other companies I had access to.

In order to elicit the data, I used Labov's *Sociolinguistic Patterns* (1972), pp. 70-109, as the basis of the interview set up created to collect data from the informants. I divided my interviews into three parts following Labov's model. In addition, the average duration of each interview was fifteen minutes.

These interviews were conducted over a period of three months throughout the summer of 1991 in the city of Rio de Janeiro, Brazil.

In the first part, the informants were to read a vocabulary list which contained thirty words with the phonological features being studied. This list was composed of high frequency words that I chose with the help of Brazilian newspapers, comic books, and dictionaries.

In the second part of the interview, the subjects were to read a passage which contained twenty-eight out of the thirty words in the vocabulary list. It should be pointed out that this text was composed after the vocabulary list had been chosen. The idea was to create a passage with as many words as possible from the vocabulary list, so that a comparison could be made between the production of the words in two different environments.

In the third part, both the interviewer and the interviewee were to engage in free conversation. At the beginning of the conversation, I was the one who carried the topic to give the subject some time to relax and use a style of speech that was expected to be as casual as possible. Later, I would let the interviewee carry the conversation. However, I would from time to time ask questions about the events being told in order to try to have the informant use a relaxed and informal speech style.

Each of the three parts of the interviews aimed at a different style of speech. As suggested by Labov (1972), the more formal the social context is, then the more formal the speech will be. Therefore, I expected to be exposed to a more formal speech style during the reading of the vocabulary list, to a sort of formal and casual style during the reading passage, and to an even more casual style during the free conversation. These expectations are in

agreement with Labov's idea of having a hypothetical stylistic continuum with casual style at one end and formal style at the other. This same idea has also been used by other fieldworkers besides Labov.

All the interviews were entirely tape-recorded with the written consent of the participants, and all the three parts of the interview were later transcribed. There was an interval of not more than 30 seconds to 1 minute between each two parts of the interview. Since I am focusing my work on specific phonological features, I decided to use mixed phonetic transcription in this study. Therefore, I only phonetically transcribed the words' and sentences' fragments which contained the feature being studied: *diferente* [dʒi]feren[tʃi] 'different', *mas eu vi meu tio* ma[zew] vi meu [tʃi]o 'but I saw my uncle'.

Data analysis

For the sake of clarification, I provide tables containing results in numbers as well as in correspondent percentages. Following each table, I give a statistical analysis of the relevant data presented in the table comparing and contrasting all matching possibilities regarding the main correlates sex and age. T-scores are calculated to test the hypotheses that mean retraction increases from list to text, from text to conversation, and from list to conversation for various age/sex cohorts. T-scores are also calculated for statistically significant differences in retraction within environments by sex and age.

T-test scores indicate that the difference in the totals between the environments, disregarding any difference in sex or age supporting the theory that women retract more than men do, is statistically significant at the 10%

level. The calculated t values for retraction are: 5.25 (list-text), 1.35 (list-conversation), and 6.16 (text-conversation). The critical t value is 1.29.

When I first chose retraction of the sibilants [s] and [z] in Cariocan speech, I had in mind that the only allophones of /s/ would be the retracted voiceless postal-alveolar [ʃ] and its voiced counterpart [ʒ]. I did in fact find that some people will actually produce the alveolar fricatives [s] and [z] sometimes, and the postal-alveolar fricatives [ʃ] and [ʒ] other times. However, I also discovered that instead of only retracting [s] and [z] to a postal-alveolar position, some of the informants would also retract them sometimes further into either a uvular fricative [χ], or other times [Ø], *mas* [maχ] or [maØ] but. Besides, some informants would also produce the allophone [z] any time that there was a word boundary in which there was a word ending in the phoneme [s] preceded by a vowel sound and in which the following word started with a vowel sound, *mas eu* [maz'ew] 'but I'.

For the purpose of this study I discuss all the above possibilities as actual instances of retraction of the sibilants [s] and [z], but perform statistical analysis only in the occurrences without variants. Whenever presenting the numbers and correspondent percentages, I indicate what percentage is due to non-retraction, and what percentage is due to some other phenomena including the production of the uvular fricative [χ], [Ø], or the sibilant [z] in word boundary. And I also give the percentage of actual retraction.

For the sake of clarity, I ought to point out that in Portuguese the sibilants [s] and [z] can be represented in writing by different symbols like *s*, *ss*, *ch*, *x*, among others. However, not all environments yield opportunities for retraction. I believe that the fact that these sibilants have different written

representations is an indication that some time in the history of Portuguese there was a merging of different sounds into these sibilants in some environments, causing distinctions among them to be neutralized in most environments. But this distinction was preserved by the written form and in the behavior of the sibilants in retraction environments. Therefore, this work does not deal with words using all the different forms to represent the sibilants being studied here, because not all the words with written sibilants allow for retraction.

Now, I look at the two sex cells (male and female) without regard to the influence of the age groups in the process of retraction. Since voicing does not appear to play a crucial role in the outcome of retraction, I do not take it into consideration.

When one looks at the vocabulary list, one sees that both males and females have 180 opportunities each to retract, out of which all of the different informants regardless of sex produce 164 (91.11%) retraction as a group. When looking at the passage, one can see that both men and women have 198 opportunities to retract; however, this time the male subjects retract 191 (96.46%) times, while the female subjects retract 195 (98.48%) times. This difference in retraction rate between men and women is somehow expected when one moves from a more formal speech style to a less formal one, since women tend to be more sensitive to language variations than men.

Once one looks at the free conversation part, one expects to see a raising in retraction, for this section is supposed to bring out the less formal speech style in any of the informants. Indeed, if one accepts as opportunities for retraction only those that allow a contrast between retraction and non-

retraction, the production of retraction does raise. At this point, men produce 737 opportunities to retract, and they retract 730 (99.05%) times, while the women produce 722 opportunities out of which they retract 721 (99.86%) times. See table 1.3 below.

Table 1.3 **Retraction Males and Females**

	LIST		TEXT		CONVERSATION	
	M	F	M	F	M	F
OPP	180	180	198	198	737	722
REAL	164	164	191	195	730	721
%	91.11%	91.11%	96.46%	98.48%	99.05%	99.86%

T-test scores indicate that the difference between individuals of different sexes within the same environment is not statistically significant at the 10% level. The calculated t values for table 1.3 are: 0 (male-female list), 1.18 (male-female text), and -0.29 (male-female conversation). The critical t value is 1.31.

T-test scores indicate that the difference between individuals of the same sex from the different environments is, with one exception, all statistically significant at the 10% level. The calculated t values for table 1.3 are: 3.37 (list-text males), 3.97 (list-text females), 0.93 (list-conversation males), 1.36 (list-conversation females), 6.05 (text-conversation males), and 3.56 (text-conversation females). The critical t value is 1.31.

However, if one considers the production of other allophones like [χ], [Ø], and [z] at word boundaries as opportunities to retract, one does not see

an increase in the retraction rate as one looks at the free conversation. Instead, there is a decrease in retraction since men only retract 730 (79.17%) times out of 922 opportunities. In 185 (20.07%) of the remaining opportunities, the male subjects produce one of the other allophones, and the other 7 (0.76%) times these informants do not retract at all.

When one uses the same procedure to analyze the females' performance, one notices that the outcome is similar to the males'. Here, the females have 812 opportunities to retract, out of which they only retract 722 (88.92%) times. In 89 (10.96%) of the remaining opportunities, the women produce one of the other allophones, and only once (0.12%) they do not retract at all. See table 1.4 below.

Table 1.4 Conversation

	M	F
OPPORTUNITIES	922	812
REALIZATIONS	730	722
% OF REALIZS.	79.17%	88.92%
OTHER PRODUCTIONS	185	89
% OF OTHER PRODUCS	20.07%	10.96%
NON-RETRACTION	7	1
% OF NON-RETRACT.	0.76%	0.12%

Now, I consider retraction among the different age groups without taking into account the sex difference among the informants. As one considers

the subjects from the age group 18-25, one notices that out of the 120 opportunities that the informants have they retract 116 (96.66%) of them. If one looks at the results of this same age group in the text, one notices that the subjects produce 129 (97.73%) opportunities out of 132 possible ones. This increase in retraction is again expected in moving from a more formal speech style to a less formal one.

Once one goes into the free conversation, one expects to see a rise in the percentage of retraction. If one only looks at the opportunities that allow a contrast between retraction and non-retraction, one notices that the informants of the age group 18-25 retract 100% of the 396 opportunities that they are given. Therefore, the hypothesis of an increase in the rate of retraction as one moves from a more formal to a less formal speech style still holds at this point of the data analysis. See table 1.5 below.

Table 1.5 Age Group 18-25

	LIST	TEXT	CONV.
OPP	120	132	396
REAL	116	129	396
%	96.66%	97.73%	100%

T-test scores indicate that the difference between individuals within the age group 18-25 from different environments is statistically significant at the 10% level. The calculated t values for table 1.5 are: 3.46 (list-text), 1.39 (list-conversation), and 4 (text-conversation). The critical value is 1.32.

However, if one looks at the production of other allophones like [χ], [Ø], and [z] at word boundaries as opportunities to retract, the retraction rate decreases as one moves to the free conversation part. Here, the informants are given 492 opportunities to retract out of which they retract 396 (80.49%) times. In the remaining 96 (19.51%) opportunities the subjects produce one of the other allophones shown above. See table 1.6 below.

Table 1.6 Age Group 18-25 w/Var.

	CONVERSATION
OPPORTUNITIES	492
REALIZATIONS	396
% OF REALIZATIONS	80.49%
OTHER PRODUCTIONS	96
% OF OTHER PRODUC.	19.51%

When one looks at the following age group (26-39), one notices a similar phenomenon to the one in the previous age group. In the vocabulary list, these informants have 120 opportunities to retract and they retract 105 (87.50%) of those. If one looks at the text, one sees that the subjects produce 130 (98.48%) opportunities out of 132 possibilities. Again an increase in retraction rate can be seen in this cell.

Then, moving into the free conversation cell one expects to see another increase in the retraction rate. Such an expectation is somewhat met, for even though the percentage is very similar (98.46%), we ought to consider the significant number of opportunities that the informants are given. At this point

considering only the opportunities that allow for a contrast between retraction and non-retraction, the subjects retract 449 times out of 457 possibilities that they have. See table 1.7 below.

Table 1.7 Age Group 26-39

	LIST	TEXT	CONV.
OPP	120	132	457
REAL	105	130	449
%	87.5%	98.48%	98.46%

T-test scores indicate that the difference between individuals in the age group 26-39 in different environments is, with one exception, statistically significant at the 10% level. The calculated t values for table 1.7 are: 2.80 (list-text), -0.004 (list-conversation), and 3.06 (text-conversation). The critical t value is 1.32.

However, if one considers the production of the other possible allophones [χ], [Ø], and [z] at word boundaries as opportunities to retract, once more the retraction rate drops in the free conversation just as in the previous age group. Here, the subjects produce 551 chances to retract, and they retract 449 (81.67%) of them. In 94 (17.06%) of the remaining 101 opportunities, these informants produce one of the other possible allophones presented above. And in the remaining 7 (1.27%) opportunities, no retraction takes place. See table 1.8 below.

Table 1.8 Age Group 26-39 w/Var.

	CONVERSATION
OPPORTUNITIES	551
REALIZATIONS	449
% OF REALIZATIONS	81.67%
OTHER PRODUCTIONS	94
% OF OTHER PRODUC.	17.06%
NON-RETRACTION	8
% OF NON-RETRACT.	1.27%

As one approaches the last age group (over 40 yrs. old), one notices that the retraction rate increases in a way similar to its increase in the previous age groups. It happens once one moves from a more formal speech style (vocabulary list) to a less formal speech style (free conversation). In the vocabulary list, the informants retract 107 (89.17%) opportunities out of the 120 possibilities that they have. In the text, the subjects produce 127 (96.21%) opportunities out of 132 possibilities.

During the free conversation, there is an increase in the retraction rate if one considers as opportunities only those which allow a contrast between retraction and non-retraction. Here, the informants have 606 opportunities and they retract 100% of them. See table 1.9 below.

Table 1.9 Age Group Over 40

	LIST	TEXT	CONV.
OPP	120	132	606
REAL	107	127	606
%	89.17%	96.21%	100%

T-test scores indicate that the difference between individuals in the age group over 40 yrs. old in different environments is statistically significant at the 10% level. The calculated t values for table 1.9 are: 3.71 (list-text), 2.16 (list-conversation), and 4.17 (text-conversation). The critical t value is 1.32.

However, if one considers the production of the other possible allophones [χ], [Ø], and [z] at word boundaries as possibilities for retraction, once again the retraction rate drops at this part as it did in the two previous age groups. The informants have 691 opportunities to retract, and they only retract 606 (87.70%) of them. The remaining 85 (12.30%) opportunities are produced as one of the other allophones mentioned above. See table 1.10 below.

Table 1.10 Age Group Over 40 w/ Var

	CONVERSATION
OPPORTUNITIES	691
REALIZATIONS	606
% OF REALIZATIONS	87.70%
OTHER PRODUCTIONS	85
% OF OTHER PRODUC.	12.30%

If one looks at table 1.11 below, one can see, in a more explanatory way, the difference in retraction without counting the variants among individuals in the different age groups within the same environments.

Table 1.11 Retraction Different Age Groups without Variants

	LIST			TEXT			CONVERSATION		
AGE	18-25	26-39	over 40	18-25	26-39	over 40	18-25	26-39	over 40
OPP	120	120	120	132	132	132	396	457	606
REAL	116	105	107	129	130	127	396	449	606
%	96.66%	87.5%	89.17%	97.73%	98.48%	96.21%	100%	98.46%	100%

T-test scores indicate that the difference between individuals in the different age groups within the same environment is not statistically significant at the 10% level. The calculated t values for these different age groups are: 1.06 (18-25/26-39 list), -0.39 (18-25/26-39 text), 0.44 (18-25/26-39 conversation), 1.25 (18-25/over 40 list), 0.63 (18-25/over 40 text), 0 (18-

25/over 40 conversation), -0.18 (26-39/over 40 list), 1.12 (26-39/over 40 text), and -0.44 (26-39/over 40 conversation). The critical t value is 1.32.

Now, I look at retraction taking into account both sex and age correlates. As one looks at the age group 18-25, one sees that in the list all the informants have 60 opportunities to retract. Here, the males retract 100% of the possibilities. However, the females only retract 56 (93.33%) opportunities. These results may lead one to think that males tend to retract more than females, but when one looks at the text one sees that the females retract more than males this time. The males retract 64 (96.96%) opportunities out of 66 possible ones, while the females retract 65 (98.48%) opportunities out of the same possible number of retraction. Since the retraction rate increases as one moves from the list to the text, it is expected that this rate increases once more as one looks at the free conversation.

Indeed, it does happen if one takes into consideration only those opportunities which allow for a contrast between retraction and non-retraction. Here, men retract 100% of the opportunities that is equivalent to 112 possibilities. At this point, women also retract 100% of their opportunities, equivalent to 284 possible productions. See table 1.12 below.

Table 1.12 **Age Group 18-25 Yrs. Old**

	LIST		TEXT		CONVERSATION	
	M	F	M	F	M	F
OPP	60	60	66	66	112	284
REAL	60	56	64	65	112	284
%	100%	93.33%	96.96%	98.48%	100%	100%

T-test scores indicate that the difference between individuals of different sexes within the age group 18-25 and in the same environment is not statistically significant at the 10% level. The calculated t values for this age group are: -1 (male-female list), 0.2 (male-female text), and 0 (male-female conversation). The critical t value is 1.48.

T-test scores indicate that the difference between individuals of the same sex within the age group 18-25 in all the different environments is not statistically significant at the 10% level.. The calculated t values for this age group are: -1 (list-text males), 1 (list-text females), 0 (list-conversation males), 1 (list-conversation females), 1 (text-conversation males), and 1 (text-conversation females). The critical t value is 1.37.

However, when one looks at the production of the other possible allophones [χ], [Ø], and [z] at word boundaries as possibilities for retraction, retraction rate drops during free conversation. This time, the male informants have 165 opportunities to retract and they only retract 112 (67.87%) of them, while the remaining 53 (32.13%) opportunities are produced as one of the other possible allophones already mentioned above. Even though the females also drop their retraction rate during the free conversation, it is not as drastic as the males'. Here, women have 327 opportunities to retract and they produce 284 (86.85%) retractions, while the remaining 43 (13.15%) opportunities are produced as one of the other possible allophones. See table 1.13 below.

Table 1.13 Age Group 18-25 Conv. w/Var.

	M	F
OPPORTUNITIES	165	327
REALIZATIONS	112	284
% OF REALIZATIONS	67.87%	86.85%
OTHER PRODUCTIONS	53	43
% OF OTHER PRODUC.	32.13%	13.15%

In the next age group (26-39), the male subjects retract more than the female subjects in the vocabulary list. Both males and females have 60 opportunities to retract; however, the males retract 53 (88.33%) of them while the females retract 52 (86.66%) times. But just as with the previous age group, the situation proves to be different as one moves to the text. This time both men and women have 66 opportunities to retract and both males and females retract 65 times, equivalent to 98.48% of the total number of possibilities. Since retraction rate rises as one moves from the list to the text, one expects to see it rise again during the free conversation.

In fact, if one looks at the opportunities that only yield a contrast between retraction and non-retraction, one is surprised with the results of the male informants. Here, the males' retraction rate drops compared to the text, for they retract 277 (97.53%) times out of the total 284 opportunities. But as can be seen, this drop in the retraction rate is not significant at all because it is not even equivalent to a 1% drop, which suggests that this feature is a high frequency one among men in the age group 26-39. Unlike the males, the females retract more here than they do in both the list and the text as they

produce 172 (99.42%) opportunities out of 173 possible ones. See table 1.14 below.

Table 1.14 **Age Group 26-39 Yrs. Old**

	LIST		TEXT		CONVERSATION	
	M	F	M	F	M	F
OPP	60	60	66	66	284	173
REAL	53	52	65	65	277	172
%	88.33%	86.66%	98.48%	98.48%	97.53%	99.42%

T-test scores indicate that the difference between individuals of different sexes within the age group 26-39 and in the same environment is not statistically significant at the 10% level. The calculated t values for this age group are: - 0.10 (male-female list), 0 (male-female text), and 0.04 (male-female conversation). The critical t value is 1.48.

T-test scores indicate that the difference between individuals of the same sex within the age group 26-39 in the different environments is, with one exception, not statistically significant at the 10% level. The calculated t values for this age group are: 0.99 (list-text males), 1 (list-text females), 2.91 (list-conversation males), 0.30 (list-conversation females), -0.08 (text-conversation males), and 0.02 (text-conversation females). The critical t value is 1.37.

However, as one looks at the production of the allophones [χ], [Ø], and [z] at word boundaries as actual opportunities to retract, the retraction rate drops even more for the males and also drops for the females. However, the decrease in this age group is not as drastic as it is in the previous age group

(18-25). This time the males have 362 opportunities but they only retract 277 (76.52%) of them. Out of the remaining 85 opportunities, they produce one of the other possible allophones shown above 78 (21.55%) times, while they do not retract the other 7 (1.93%) remaining opportunities. At this point, the females have 189 opportunities and they retract 173 (91.53%) of them, while in the remaining 16 opportunities the females produce one of the other allophones 15 (7.94%) times, and only once (0.53%) they do not retract at all. See table 1.15 below.

Table 1.15 Age Group 26-39 Conv. w/Var.

	M	F
OPPORTUNITIES	362	189
REALIZATIONS	277	173
% OF REALIZATIONS	76.52%	91.53%
OTHER PRODUCTIONS	78	15
% OF OTHER PRODUC.	21.55%	7.94%
NON-RETRACTION	7	1
% OF NON-RETRACT.	1.93%	0.53%

Finally, one can look at the last age group and see that, unlike in the previous age groups, here the females retract more than the males do in the vocabulary list. They all have 60 opportunities to retract; however, the males retract 51 (85%) times, while the females retract 56 (93.33%) times. As one moves to the text, one notices that there is an increase in the retraction rate of

both men and women. In this part, the male informants retract 62 (93.93%) times out of 66 opportunities, while the female informants retract 65 (98.48%) times out of the same number of opportunities that men have.

As one observes the free conversation speech style of both men and women only taking into account those opportunities that yield a contrast between retraction and non-retraction, one sees an increase in retraction. Here, men and women increase their rate to 100%. The males retract all 341 opportunities that they have, and the females retract all 265 opportunities that they have. See table 1.16 below.

Table 1.16 **Age Group Over 40 Yrs. Old**

	LIST		TEXT		CONVERSATION	
	M	F	M	F	M	F
OPP	60	60	66	66	341	265
REAL	51	56	62	65	341	265
%	85%	93.33%	93.93%	98.48%	100%	100%

T-test scores indicate that the difference between individuals of different sexes within the age group over 40 yrs. old and in the same environment is not statistically significant at the 10% level. The calculated t values for this age group are: 0.82 (male-female list), 1.34 (male-female text), and 0 (male-female conversation). The critical t value is 1.48.

T-test scores indicate that the difference between individuals of the same sex within the age group over 40 yrs. old in the different environments is, with two exceptions, not statistically significant at the 10% level. The

calculated t values for this age group are: 1.14 (list-text males), 1 (list-text females), 1.96 (list-conversation males), 1 (list-conversation females), 2 (text-conversation males), and 1 (text-conversation females). The critical t value is 1.37.

However, if one looks at the production of the allophones [χ], [Ø], and [z] at word boundaries as opportunities to retract, the retraction rate drops as in the previous age groups. Here, the male subjects have 395 opportunities to retract and they retract 341 (86.33%) of them. The remaining 54 (13.67%) opportunities are produced as one of the above allophones. As one looks at the females' results, one sees that the women have 296 opportunities to retract and they retract 265 (89.53%) of them. The remaining 31 (10.47%) possibilities are produced as one of the allophones mentioned above. See table 1.17 below.

Table 1.17 Age Group Over-40 Conv. w/Var.

	M	F
OPPORTUNITIES	395	296
REALIZATIONS	341	265
% OF REALIZATIONS	86.33%	89.53%
OTHER PRODUCTIONS	54	31
% OF OTHER PRODUC.	13.67%	10.47%

The results regarding retraction production in Cariocan Portuguese can be better seen if all are placed in one single table. It can be noticed that as expected there is a consistent increase in the retraction rate as one moves

from a more formal speech style (vocabulary list) to a less formal speech style (free conversation). See table 1.18 below.

Table 1.18 **Retraction without Variants**

	LIST						TEXT						CONVERSATION					
	18-25		26-39		OVER 40		18-25		26-39		OVER 40		18-25		26-39		OVER 40	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
OPP	60	60	60	60	60	60	66	66	66	66	66	66	112	284	284	173	341	265
Real	60	56	53	52	51	56	64	65	65	65	62	65	112	284	277	172	341	265
%	100	93.33	88.33	86.66	85	93.33	96.96	98.48	98.48	98.48	93.93	98.48	100	100	97.53	99.42	100	100

However, one should also look at the other allophones that occur during the free conversation speech style instead of retraction; therefore, the data in table 1.19 are very helpful for this purpose.

Table 1.19 Retraction with Variants during Conversation

	18-25		26-39		OVER 40	
	M	F	M	F	M	F
OPPORTUNITIES	165	327	362	189	395	296
REALIZATIONS	112	284	277	173	341	265
% OF REALIZATIONS	67.87%	86.85%	76.52%	91.53%	86.33%	89.53%
OTHER PRODUCTIONS	53	43	78	15	54	31
% OF OTHER PRODUC	32.13%	13.15%	21.55%	7.94%	13.67%	10.47%
NON-RETRACTION	-	-	7	1	-	-
% NON-RETRACTION	-	-	1.93%	0.53%	-	-

Comments

Retraction is a high-frequency feature in Cariocan Portuguese. As one observes this feature, one sees that its percentage is very similar between men and women; however, in general women tend to retract a little more than men do, as can be seen in table 1.3, p. 9.

However, it should also be noticed that retraction is not unique to Cariocan Portuguese. This feature is present not only in other Portuguese dialects, but also in dialects of the Spanish speaking world. For instance, Panamanian Spanish has the same uvular fricative variant [χ] that Cariocan Portuguese does. Therefore, a word like *mismo* 'same' will be produced as [miχmo].

When studying retraction in Cariocan Portuguese, one ought to approach the data in two different ways. First, one should analyze the data in

the list, the text, and the free conversation including only the opportunities that allow a contrast between retraction and non-retraction. Second, one should look at the data in the free conversation that allows for the production of the variants [χ], [Ø], and [z] at word boundaries as actual opportunities for retraction.

In the first part, the rate of retraction is high because very rarely does an informant produce an allophone different from the ones in the contrast between retraction and non-retraction. Plus, I deal with the opportunities that only allow a contrast between retraction and non-retraction during the free conversation speech style.

However, in the second part when I analyze the free conversation speech style that includes the production of the allophones [χ], [Ø], and [z] at word boundaries as actual opportunities for retraction, the retraction rate drops compared to the first part. I choose to consider the production of these different allophones as possibilities for retraction because these variants work in combination, for sometimes a single informant produces them in the same environment, like the word *mas* 'but' that is produced as [maʒ], [maχ], [maØ], or [maz]. Thus, I choose to take into consideration these different productions, for they show to be relevant in the final results.

Further, if I do not consider any of the allophones [χ], [Ø], and [z] at word boundaries, I cannot speculate about a relation between this feature and some social factor. It happens because the retraction rate always increases when one moves from the list to the free conversation as long as one considers as opportunities for retraction only those that provide a contrast between retraction and non-retraction.

However, once one considers the occurrence of the other allophones as possibilities for retraction, it is possible to see a relation not between retraction and some social factor, but between the percentage of the production of the allophones [χ], [Ø], and [z] at word boundaries, and the factors age and sex.

I speculate that the production of these variants as a group mixed with retraction seem to associate an individual to a younger male speech style. I draw this conclusion from the data in this area. See table 1.20 below.

Table 1.20 Free Conversation's Variants Production

	18-25		26-39		OVER-40	
	M	F	M	F	M	F
REAL	53	43	78	15	54	31
%	32.13%	13.15%	21.55%	7.94%	13.67%	10.47%

But I have to point out that the results above are not statistically significant according to the results of the t-test using the 10% level of significance.

These variants account for 32.13% of the males' retraction opportunities in the age group 18-25; that is more than twice the percentage of the females in the same age group. In the older age groups, one notices that the production of these variants drop, as for instance in the male age group over-40 where it drops to less than 14%.

Therefore, I propose that the production of these variants mixed with retraction is more characteristic of young males between ages 18 and 25. It seems that as a man grows older, he produces less of these variants if he

wants to have his speech style to be associated with the speech style of a more mature man; however, a man produces more of these variants as he grows older if he wants to reverse the effect. However, I cannot prove that these older male informants in the age group over-40 used to have the mixture proposed above when they were younger. This might be a new phenomenon, and the young subjects who produce this will continue to produce it when they are older. In summary, I cannot propose and adequately defend a theory regarding these features with the restricted amount of data that I have for my work.

Conversely, women seem to produce as little as possible of these variants, for females perhaps notice that the excessive production of these variants mixed with retraction may associate an individual's speech style with a younger male speech style. However, this assertion is also speculation, for I cannot statistically support it with the restricted data that I have.

I also speculate that retraction is a declining feature in the dialect being studied here, for this feature is being alternated with the variants shown before by most of the informants from the younger generation, and also by individuals of older generations. This might suggest that as the older generations die, retraction will eventually die out and merge with the other variants.

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